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National Oceanic and Atmospheric Administration:  
Civil Assets for Department of Defense Use

J. J. Milanese, K. M. Poehlmann

August 1990

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This Note describes the civil satellite and ground station assets owned by the National Oceanic and Atmospheric Administration (NOAA) and documents the existing relationship between NOAA and the Department of Defense (DOD) as a basis for DOD use of these assets during times of declared national emergency. NOAA is legally required to coordinate its programs with the DOD and provide peacetime assistance in planning for DOD's wartime duties. The authors discuss deficiencies in this relationship and make recommendations for improvements.

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## PREFACE

The Department of Defense (DoD) has shown increasing interest in the potential use of civil and commercial satellites and ground station assets to augment DoD satellite system resources during peacetime as well as during national emergency. However, DoD assets may not be sufficient to support critical operations when extraordinary requirements are imposed on the normal peacetime complement of satellite systems. In addition, there is likely to be considerable data traffic during crises leading to declared national emergency, under which DoD assets may be destroyed or rendered less effective. Civil and commercial satellites could be used to augment the capabilities of destroyed or degraded military assets and to provide for surge requirements.

This Note describes the civil satellite and ground station assets owned by the National Oceanic and Atmospheric Administration (NOAA) and documents the existing relationship between NOAA and the Department of Defense for the latter's use of these assets during times of declared national emergency. NOAA is legally required to coordinate its programs with the DoD and provide peacetime assistance in planning for DoD's wartime duties. The Note discusses deficiencies in this relationship and makes recommendations for improvements.

This document was produced as part of a larger study performed under the Technology Applications Program of RAND's Project AIR FORCE. The project is entitled Civil/Commercial Satellite Augmentation of DoD Space Assets. It was sponsored by the Directorate of Space and SDI Programs of the Office of the Assistant Secretary of the Air Force for Acquisition (SAF/AQS).

The authors have concentrated on NOAA in this Note to permit wider dissemination of our findings than would be possible through a classified report. The authors consider NOAA assets to be the most important of the civil or commercial assets available to be transferred to DoD in the event of national emergency. NOAA's progress in negotiating agreements represents a potential model for future agreements between the DoD and other agencies. Details concerning the legal authority for asset transfer include documentation of Executive Orders, Public Laws, Regulations, Memoranda of Understanding, and Memoranda of Agreement.

The majority of DoD personnel interviewed during the course of this research were generally unaware of NOAA's role in the meteorological satellite area. The perception was that the National Aeronautic and Space Administration (NASA) was the U.S. weather satellite operator. Widespread ignorance of NOAA's important role in gathering and supplying meteorological data prompted the publication of this Note.

The data herein are accurate as of January 1989, when the document began its review and publication cycle. The Note is therefore a "snapshot" of NOAA satellite system configuration and capability. However, recommendations regarding long-range contingency planning, training programs, system deficiencies, and improvements of NOAA-DoD agreements remain valid despite small variations in current capability.

This work should be of interest to those seeking to understand the NOAA-DoD relationship, or to those wishing to use it as a model.

## SUMMARY

**The Note is a presentation of the capabilities of the assets of the National Oceanic and Atmospheric Administration (NOAA) and how these assets might be used in peacetime or to meet future crises or wartime military needs. The following topics are discussed:**

- History and antecedents of NOAA
- NOAA assets of interest
- Compatibility between NOAA and DoD meteorological satellites and ground stations
- Legal authority for use of NOAA assets by the U.S. military
- Conclusions and recommendations.

**Today, NOAA's meteorological assets are impressive in terms of their potential to supplement DoD resources. NOAA operates as many polar orbiting weather satellites as DoD and has two geostationary orbiting weather satellites (DoD has none).<sup>1</sup> In the worldwide inventory of active orbiting weather satellites whose data are potentially available to DoD for emergency use, the percentages are as follows:**

- DoD: 25 percent
- NOAA: 50 percent
- Other: 25 percent

**Clearly, NOAA is the major world player and must be considered a most important national asset, both in terms of routine operations and throughout the spectrum of conflict.**

**Some DoD and NOAA weather satellites are complementary. They have similar orbits, use nearly equivalent equipment, and perform similar functions. Unfortunately,**

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<sup>1</sup>When this document was written in 1989, two GOES satellites were active. As of August 1990, only one is fully operational.



**the ground stations supporting the NOAA TIROS and DoD Defense Meteorological Support Program (DMSP) are not sufficiently compatible or interchangeable. This divergence could affect the use of NOAA resources to augment DoD assets.**

NOAA and the DoD have formulated broad overall agreements for mutual agency cooperation during times of national emergency. Asset transfer between antecedent organizations occurred smoothly during World Wars I and II. Subsequent agreements have further defined these transfers from NOAA to DoD under certain specific conditions. In particular, Executive Order No. 11023, dated May 29, 1962, designates the Secretary of Commerce to transfer NOAA vessels, equipment, stations, and personnel to an appropriate military department when the President has declared a state of national emergency. **These cooperative agreements between NOAA and the DoD represent a model for other pre-crisis planning arrangements.**

Unfortunately, the various Executive Orders, Memoranda of Understanding (MOU), and Memoranda of Agreement (MOA) do not specifically address the question of satellite assets. While ships, geodetic equipment, etc. are occasionally enumerated, satellites, as well as their associated ground tracking and control stations, are not specifically referenced. **DoD and NOAA should coordinate and approve an MOU or MOA, specifically addressing the issue of satellite and ground station assets.** Part of the agreement should detail plans to assure the continued use of NOAA personnel during times of national emergency.

On the basis of our findings regarding deficiencies noted during NOAA annual exercises, **we recommend that secure communication links be improved between DoD users and the NOAA Satellite Operation Control Center (SOCC).** Interoperability issues regarding NOAA and DMSP ground stations as well as divergence between NOAA and DMSP satellite functions and designs must be reconciled if the DoD hopes to handle emergency operations effectively.

## ACKNOWLEDGMENTS

Lieutenant Colonel Ted Mervosh, our project monitor, provided insight regarding the relative importance of specific research areas to other organizations within the USAF and DoD.

Mr. Larry Heacock of NOAA graciously reviewed our initial draft and provided valuable data regarding satellite positions and performance. His comments and suggestions were perceptive and contributed to the accuracy of the final document. Other senior NOAA personnel, too numerous to mention, generously provided detailed information essential to our study. In particular, the NOAA Officer Corps either provided directly, or aided in the gathering of, many of the legal documents included as appendices. Discussions with them gave us unique insight into the NOAA-DoD relationship.

We also appreciate the important observations made by RAND colleague Bruno Augenstein, particularly his advice to emphasize that peacetime use of assets does not automatically translate into effective use during times of national emergency. Cullen Crain assisted in clarifying the presentation of our results.

## CONTENTS

PREFACE .....	iii
SUMMARY .....	v
ACKNOWLEDGMENTS .....	vii
FIGURES AND TABLE .....	xi
Section	
I. INTRODUCTION .....	1
II. HISTORY OF NOAA .....	3
U.S. Coast Survey .....	4
U.S. Coast and Geodetic Survey .....	5
Separate Uniformed Service .....	5
Activities During Wartime .....	5
Environmental Science Services Agency .....	6
National Oceanic and Atmospheric Administration .....	7
III. NOAA ASSETS OF INTEREST .....	10
Meteorological Satellites .....	10
Polar Orbiting Satellites .....	13
Geostationary Operational Environmental Satellite .....	14
IV. COMPATIBILITY BETWEEN NOAA AND DoD METSATS AND GROUND STATIONS .....	17
V. LEGAL AUTHORITY FOR USE OF NOAA ASSETS BY THE MILITARY .....	18
VI. CONCLUSIONS AND RECOMMENDATIONS .....	21
Appendix	
A. 33 U.S.C. SEC 855, 33 U.S.C. SEC 858 .....	25
B. EXECUTIVE ORDER NO. 11023 .....	26
C. DoD/DoC REGULATIONS GOVERNING COOPERATION OF NOAA WITH THE DoD .....	29
D. MOU BETWEEN THE DoD and DoC CONCERNING THE USE OF NOAA MAPPING, CHARTING, AND GEODETIC EQUIPMENT, FACILITIES, AND SERVICES DURING A NATIONAL EMERGENCY .....	34
BIBLIOGRAPHY .....	37

## FIGURES

1. Department of Commerce organization chart . . . . .	3
2. NOAA organization chart . . . . .	7
3. NESDIS organization chart . . . . .	9
4. Free world distribution of active meteorological satellites . . . . .	10
5. Orbits of active free world meteorological satellites as of January 1989 . . . . .	12
6. Observation coverage of GOES satellites . . . . .	16

## TABLE

1. NOAA (TIROS-N) physical characteristics . . . . .	14
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## I. INTRODUCTION

This Note is one of a series describing the potential military use of civil and commercial satellites during peacetime or to meet future crises or wartime military needs. It addresses the use of National Oceanic and Atmospheric Administration (NOAA) resources. The NOAA assets are perhaps the most important potential resources available to the Department of Defense for use in both peacetime and conflict. While many other resources are available—for example, communication satellites—NOAA is unique in having a virtual monopoly on meteorological satellites that could be used as backup for military assets. No single communication satellite company represents such a major concentration of resource availability as NOAA does within its field. Further, DoD communication requirements are fairly modest, representing only a small fraction of available capacity. For meteorological satellite operation, NOAA is the free world's main agency, with DoD being an extensive user of NOAA assets during peacetime.

The focus of this document is on the NOAA satellite system resources. An understanding of the NOAA assets and operational agreements is necessary, because NOAA can serve as a model for other U.S. civil organizations in implementing agreements with DoD. NOAA operates the majority of the free world's civil meteorological satellites (metsats), a resource vitally important during any type of crisis—earthquake, hurricane, military encounter, mobilization, etc. Further, because NOAA is a government entity, it is the institution most attuned to cooperation with DoD and is the furthest along in preparing emergency action plans.

The major study concerning DoD use of civil and commercial satellites, of which this document is a small part, categorized potentially available satellites into four major institutional categories:

- U.S. civil
- U.S. commercial
- Foreign national
- International.

The U.S. civil category consists of satellites owned and operated by the U.S. government. NOAA and the National Aeronautics and Space Administration (NASA) organizations fit in this category clearly and unambiguously. However, EOSAT is also included in this category, even though it is a private company. EOSAT operates the LANDSAT series of satellites, which are developed according to NOAA requirements and launched by NASA. This Note considers only NOAA's assets and NOAA's relationship with the DoD.

## II. HISTORY OF NOAA

NOAA is a portion of the Department of Commerce (DoC), as illustrated in the DoC organization chart (Fig. 1). It was founded in 1970 with the merger of the Fisheries Service and the Environmental Science Services Agency (ESSA). NOAA and its antecedents continue a long and distinguished record of achievements in surveying, geodesy, and oceanographic and atmospheric research going back to the early days of the Republic.

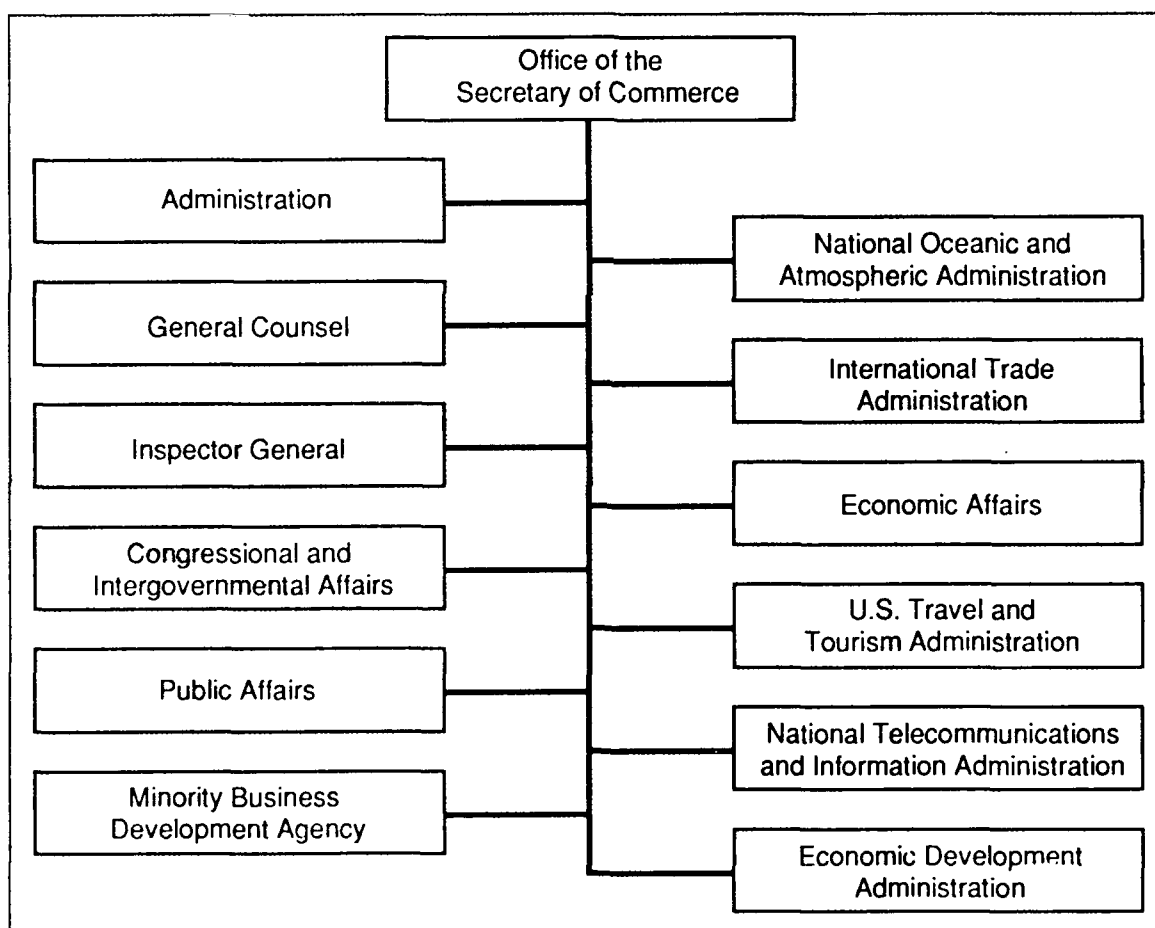


Fig. 1—Department of Commerce organization chart

## **U.S. COAST SURVEY**

The original antecedent of NOAA was the U.S. Coast Survey, which was founded in 1807 during President Thomas Jefferson's last term. Its purpose, as indicated by its name, was to survey the coast of the United States. It also evaluated fisheries; obtained tidal and current information; charted harbors and estuaries; and generally recorded information on landforms, resources, weather and soundings, as well as other environmental and anthropological data. The actual field work was directed by qualified officers officially entitled "assistants." These were either civilians or Navy or Army officers. The military officers were assigned for temporary duty to the Survey and later returned to their normal duty in their own service. Much of the Survey's actual day-to-day work was performed by civilians under supervision of these "assistants."

Assignment to the U.S. Coast Survey was not an exile for pre-Civil War military officers because it provided useful experience in honing technical and leadership skills. For Army officers, this represented an opportunity to exercise their knowledge of civil engineering. It should be recalled that the U.S. Military Academy at West Point, founded in 1802, was originally envisioned as a technical school for the Army. For some time, it was the sole source of the U.S. Army's engineers. Even today, the best graduating students are permitted to request duty in the Corps of Engineers. The engineers were grateful for the chance to use their surveying or engineering skills to determine the possible location of harbors, cities, and industrial areas, rather than engage in endless close order drill or continuous and boring duties on the frontier. Real wars were few and far between. Naval officers were also eager to serve in the Survey. At the time, the regular U.S. Navy was very small and the opportunity to command a warship was minimal. The U.S. Coast Survey used much smaller ships than the Navy, where command opportunities for junior rank naval officers were more possible. At one time, almost one-third of all Navy officers on active duty had been assigned to the U.S. Coast Survey at some point in their careers.

After the Civil War, Army officers were not available for assignment to the U.S. Coast Survey. Supervision of survey work was performed by Navy or civilian "assistants."



## **U.S. COAST AND GEODETIC SURVEY**

By 1870, it was recognized that mapping the large landmass between the Atlantic and Pacific Oceans presented difficulties but opportunities. Congress issued a directive to "extend the triangulation of the coast survey to form a connection between the Atlantic and Pacific Coast." The Act of March 3, 1871 specified this requirement and provided the new name—U.S. Coast and Geodetic Survey (C&GS). Subsequent legislation in the Act of June 28, 1879 extended C&GS responsibilities to include the Mississippi River Basin. The C&GS continued as an organizational title until 1965, when a reorganization created the Environmental Science Service Administration.

In the Spanish American War of 1899, Navy officers were withdrawn from the C&GS and returned to Navy control.

## **SEPARATE UNIFORMED SERVICE**

It is not common knowledge that the United States has uniformed services other than the U.S. Army, Navy, Marine Corps, and Air Force. The Coast Guard, Public Health Service, and the NOAA Officer Corps are three of these less well-known organizations. The present NOAA Corps had its antecedent in the C&GS Officer Corps.

The formation of the C&GS Officer Corps was included in the Act of May 22, 1917, which also increased the strength of the Navy and Marine Corps.<sup>1</sup> The Secretary of Commerce promulgated the regulations concerning the examination, appointment, and promotion of C&GS officers on June 20, 1917. C&GS Bulletin No. 25 of June 1917 specified the details of the commissioning and indicated that the President had sent nominations to the Senate, which were confirmed. The NOAA Corps is currently limited to a maximum of 399 commissioned officers.

## **ACTIVITIES DURING WARTIME**

The Act of May 22, 1917 also authorized the transfer of vessels, equipment, stations, and personnel of the C&GS to the War or Navy Departments. After U.S. entry into World War I, the Secretaries of War, Navy, and Commerce signed a set of joint regulations on August 27, 1917 specifying duties to be performed by C&GS assets. On September 24, 1917, President Wilson signed Executive Order No. 2707 transferring 29

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<sup>1</sup>40 Stat. 87-88, codified as amended as 33 U.S.C. Sections 855, 858 (1966). See App. A.

commissioned officers to the War Department, and 38 commissioned officers and the ships Isis, Surveyor, and Bache to the Navy Department. Also, ten civilian members were commissioned in the Officer Reserve Corps and transferred. Executive Order Nos. 2782, 2861, 3028, 3029 and 3044 transferred assets to and from the services. After World War I, the C&GS assets were returned to Department of Commerce control.

C&GS assets were again transferred to the War and Navy Departments in World War II. In particular, 94 officers and various ships were transferred through a series of C&GS bulletins during January, February, and March 1942. Again, joint regulations were promulgated by the Secretaries of War, Navy, and Commerce. After World War II, the C&GS assets were returned to Department of Commerce control.

Several important points can be inferred from this experience during the two world wars. First, the Act of May 22, 1917 is the basis for transfer of assets to military control. Second, joint regulations by the Military Secretary(ies) and the Commerce Secretary are used to implement the May 22, 1917 Act. Third, occasional Presidential Executive Orders either facilitate or expedite transfers. Having such facilitating legislation and agreements in place prior to the actual time of implementation is extremely important.

The Act of May 22, 1917 was amended in 1966 to clarify terminology.<sup>2</sup> Where appropriate, the appellation *Secretary of Defense* was substituted for Secretary of War and Secretary of Navy. The Air Force was added as a potential military department where assets might be transferred. Finally, where references were previously made to personnel, the new references were made to commissioned officers.

## **ENVIRONMENTAL SCIENCE SERVICES AGENCY**

By 1965, the President desired to form a single agency to understand and predict environmental effects. In that year, the Presidential Reorganization Plan No. 2 formed the ESSA through a merger of C&GS and the Weather Bureau. Subsequently, the Secretary of Commerce added the Central Radio Propagation Laboratory to ESSA.

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<sup>2</sup>PL 89-657, 80 Stat. 907, codified as 33 U.S.C. Sections 855, 858, 868a, 859a-1 (1966).

## NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Presidential Reorganization Plan No. 4 was sent to the Congress on July 9, 1970 and became effective on October 30, 1970. It created a National Oceanic and Atmospheric Agency by merging ESSA and the Fisheries Service. NOAA's organization chart is shown in Fig. 2. The previous uniformed service of ESSA now became the NOAA Corps.

The National Ocean Service includes the former C&GS and assumes its former duties, including performing oceanographic and geodetic surveys; publication of coastal,

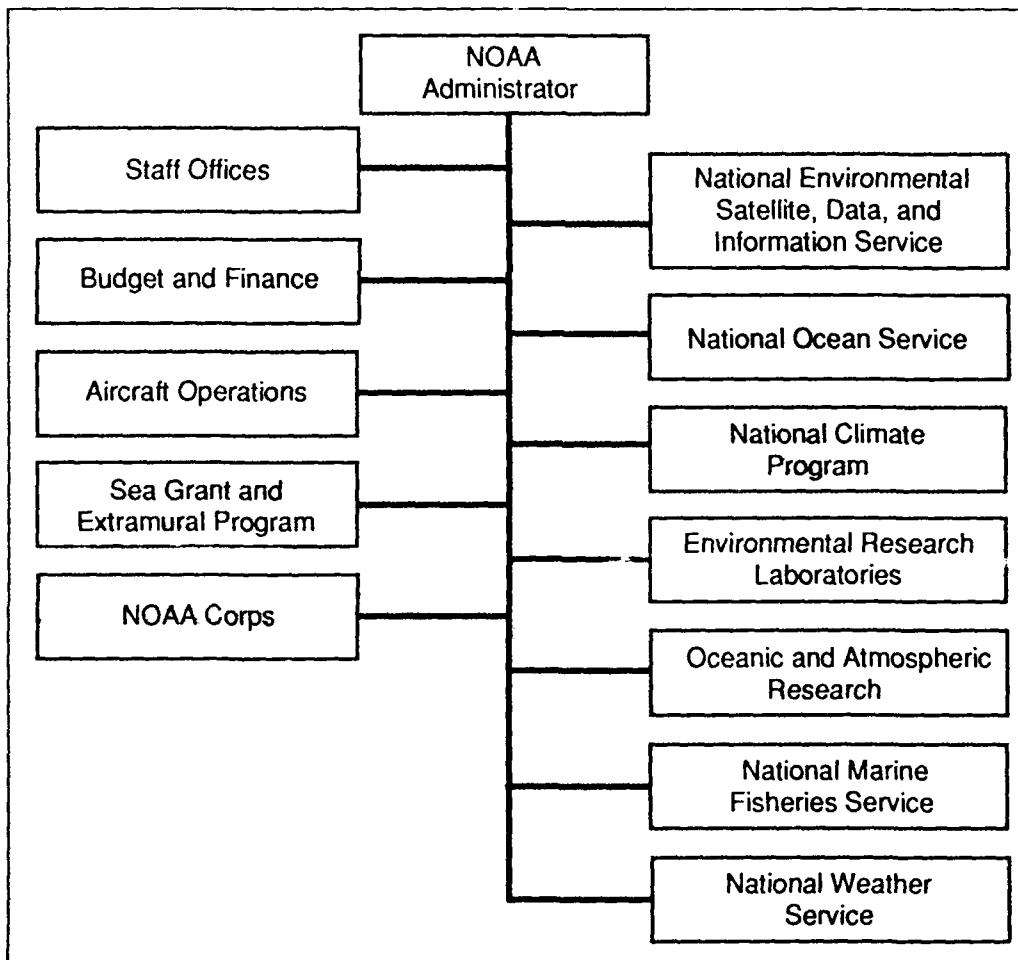


Fig. 2—NOAA organization chart

riverine, and Great Lakes navigation charts and selected aeronautical charts; and publication of tide and current information.

The National Weather Service was formerly called the U.S. Weather Bureau. It informs the public on weather affecting the United States and its possessions; forecasts various weather hazards; and provides specialized information to agricultural, aeronautic, maritime, and other special purpose users.

The National Maritime Fisheries Service is NOAA's agency for administering responsibilities specified under the 1972 Maritime Mammals Protection Act and the 1973 Endangered Species Act. It is chartered to discover, develop, and conserve living marine resources. As a result, it monitors fishery catches and operations and conducts research on various fish species.

The primary organization of interest here is the National Environmental Satellite Data and Information Service (NESDIS). This organization is illustrated in Fig. 3. NESDIS operates the ground stations that receive and process data transmitted by the NOAA and GOES satellites. NESDIS is a participant in the Space Defense Operations Center (SPADOC) mission. This Center serves as the focal point for the United States space defense operations and is operated by the United States Space Command, which is charged with providing space defense for the United States.

The Environmental Research Laboratories conduct research on the coastal environment, atmospheric and upper-air atmospheric dynamics, oceanic processes, and the environmental effects of global pollution.

The Sea Grant and Extramural Office administers the Sea Grant Program. It provides financial support for institutions and individuals engaged in marine research.

The Assistant Administrator oversees satellite collection and processing activities. This branch of NOAA is described in detail in Sec. III.

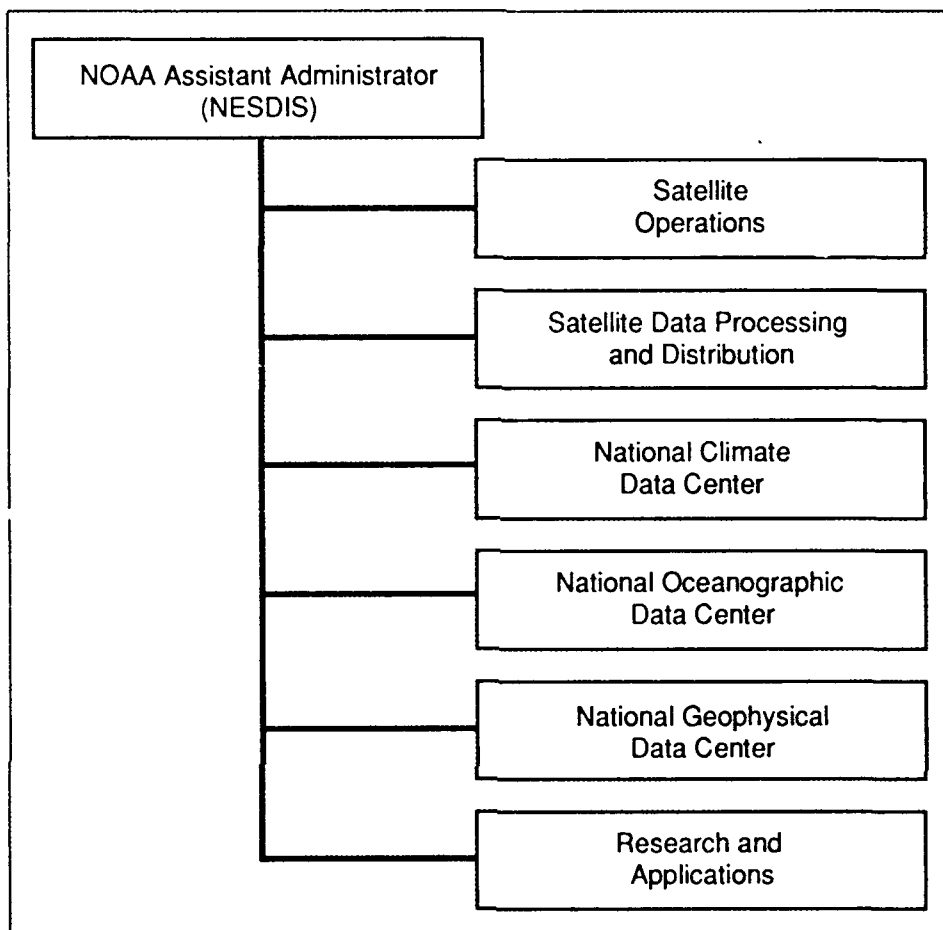


Fig. 3—NESDIS organization chart

### III. NOAA ASSETS OF INTEREST

The major NOAA assets of interest in this study are the meteorological satellites, associated ground stations, supporting personnel, and organizational structure. We will primarily discuss the NOAA satellites and associated ground stations.

#### METEOROLOGICAL SATELLITES

NOAA is the major operator of meteorological satellites in the free world. Figure 4 illustrates the distribution of free world metsats as of January 1989. This enumeration includes satellites that are potential providers of data to DoD. We judged that some foreign satellites that currently provide meteorological data in peacetime should not be included, since they cannot be relied upon to provide data in times of U.S. national emergency.<sup>1</sup> NOAA currently receives data from foreign sources, and that is expected to continue, whether emergency situations exist or not. Receipt of satellite data from these

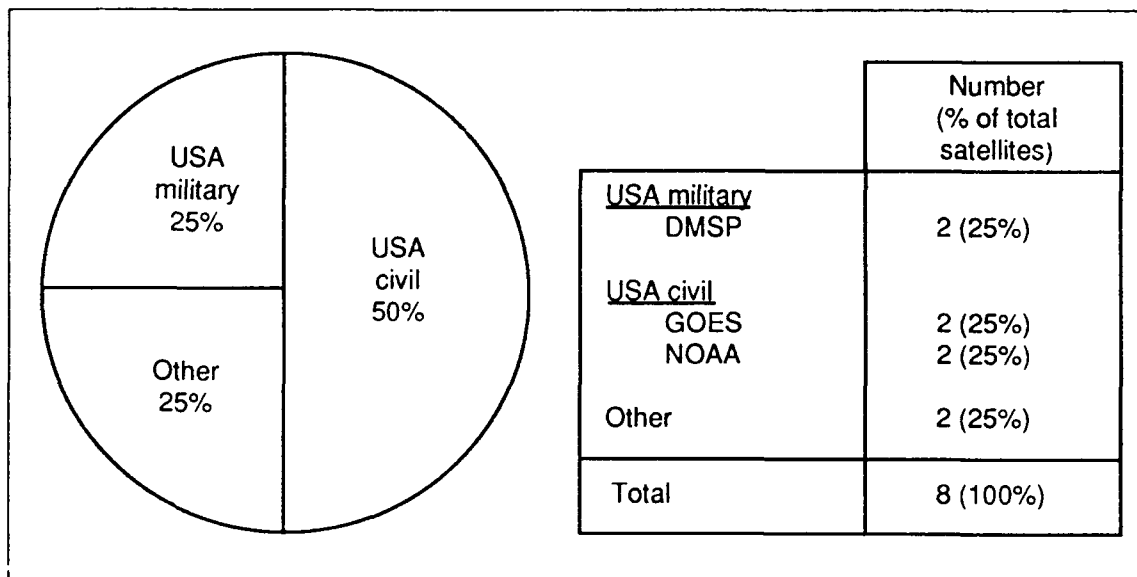


Fig. 4—Free world distribution of active meteorological satellites

<sup>1</sup>At this writing, political considerations led us to exclude the USSR and India.

sources in broadcast mode is passive, and NOAA and DOD can receive them without agreement of the providing entity. Some data and products communicated through the Global Telecommunications System (GTS) come to NOAA through bilateral communication circuits. These data could continue to be available to DoD in an emergency, presuming the continued good will of the providing nation/organization.

NOAA provides two geostationary orbiting satellites<sup>2</sup> and two polar orbiting satellites, which in number equal the rest of the free world's (civil and military) metsats. Even if other foreign systems cannot be postulated to provide shared data during times of conflict, as they normally provide in peacetime, NOAA still provides geostationary data over Continental U.S. (CONUS), Atlantic, and Pacific areas that DoD does not have. Further, it complements the DoD Defense Meteorological Satellite Program with two polar orbiting satellites of its own. The orbits of the currently active free world metsats are shown in Fig. 5. NOAA has the only nonmilitary polar orbiting satellites providing worldwide coverage.

As this Note is concerned with NOAA capabilities, we will not discuss DMSP or foreign systems.

NOAA satellites<sup>3</sup> are designed to provide daily weather information for worldwide weather forecasting. In particular, cloud cover and other meteorological data are obtained and processed through a worldwide data network in cooperation with international weather organizations, such as the World Meteorological Organization. NOAA also provides and receives detailed weather information from DoD. These satellites are launched by NASA and subsequently transferred to NOAA control.

The polar orbiting satellites (NOAA) provide the following meteorological information:

- global vertical temperature and humidity readings
- high resolution visible and infrared (IR) images of the earth's atmosphere
- solar energy fluxes.

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<sup>2</sup>GOES-6 is now operating at reduced capacity and drifted to its present position, shown in Fig. 5. This Note is a snapshot of capabilities as of January 1989.

<sup>3</sup>There is a terminology problem in using the prefix "NOAA." NOAA sometimes means the National Oceanic and Atmospheric Administration. When used with a trailing digit, such as NOAA-9, it means a polar orbiting satellite.

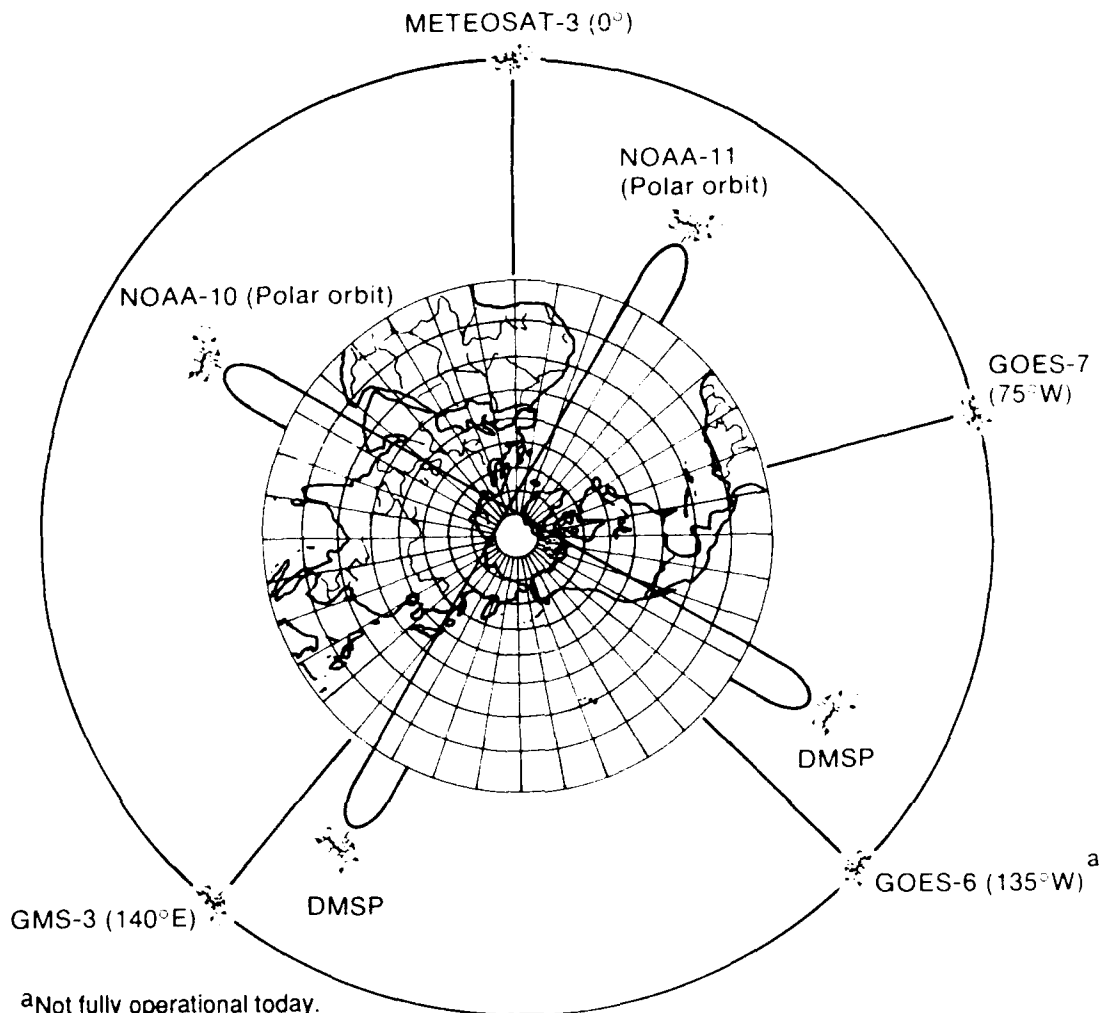


Fig. 5—Orbits of active meteorological satellites as of January 1989

The geostationary satellites (GOES) provide the following meteorological information:

- high resolution visible and medium resolution IR images of the earth's atmosphere
- areas of higher specific temperature and humidity readings
- meteorological data relayed from buoys, ships, etc.
- solar energy fluxes.



## **POLAR ORBITING SATELLITES**

The third generation of NOAA polar orbiting satellites draws upon the instrument technology used in NASA's NIMBUS program. The bus is based upon the DMSP Block 5-D Spacecraft built by RCA for the Air Force. This system is called TIROS-N for Television Infrared Observation Satellite (NOAA).

The two existing satellites, NOAA-10 and -11, are in near-polar, circular, sun-synchronous orbit. The satellites' nominal altitude is approximately 850 km. They orbit the earth approximately every 102 minutes and provide coverage of the entire earth four times a day. The two satellites are currently positioned with a nominal orbital separation of 90°. Considerable thought has gone into the orbital placement of the spacecraft. Equatorial crossing times were selected to provide best geographic coverage per synoptic data windows. One satellite operates in a morning-descending orbit crossing the equator at 0730 local solar time. The second satellite operates in an afternoon-ascending orbit at 1340 local solar time.

Each satellite transmits in real time to automatic picture transmission (APT) and high resolution picture transmission (HRPT) users throughout the world. The system collects and distributes data for use in the National Oceanic Environmental Satellite System (NOESS) and supports Global Weather Watch equipment. Data are supplied in real time to over 1000 readout stations in over 120 countries. In addition, various ships are able to access the data in real time.

The APT and HRPT users receive real-time data through dedicated stations or directly. However, other data can be stored on board the satellite. Thus, data from orbital passes not in view of a readout station can be stored and later dumped to a U.S. data acquisition station. The data can be retransmitted through a General Electric SATCOM communication satellite to the NOAA Satellite Operation Control Center (SOCC) in Suitland MD. It can then be processed and transmitted to interested users.

The NOAA satellites also carry a Data Collection and Platform Location System, which collects and transmits environmental data from buoys, ships, terrestrial stations, balloons, etc. The platform location can then be determined by ground processing of the doppler measurements of the carrier frequencies. Data collected from each platform include identification and environmental measurement and are sent in the HRPT and beacon transmissions. The vehicle's physical characteristics and transmission information are given in Table 1.

## GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE

The primary function of the GOES is to gather timely weather information, including advanced warning of impending storms over the United States. Because of its orbital position and geostationary nature, GOES also observes and reports weather information on the Pacific and Atlantic regions adjacent to the U.S. coasts and most of the Western Hemisphere. The present GOES satellites are part of the Global World Weather Watch System.

The earlier GOES satellites with numbers affixed (i.e., GOES 1, 2, etc.) were successors to the earlier Synchronous Meteorological Satellites. These early satellites used a visible/infrared spin scanner radiometer (VISSR) to produce two-dimensional imagery from the visible and infrared spectral regions. The geostationary orbit and the VISSR technology permitted the transmission of black and white television-like images of one-third of the earth's surface every 30 minutes.

Table 1

### TIROS-N PHYSICAL CHARACTERISTICS

Spacecraft:	Total weight—2200 lb (excludes expendables)
Payload:	Weight, including tape recorders— 850 lb
Spacecraft size:	165 in. in length 74 in. in diameter
Solar Array:	7.8 ft x 16.1 ft: 125 ft <sup>2</sup> 515 watts, end of life at worst solar angle
Power Requirements:	Full operation—475 watts Reserved—40 watts
Attitude Control System:	0.2 degrees in all axes 0.14 degrees determination
Orbit:	833; 870 km nominal, sun synchronous
Launch vehicle:	Atlas E/F
Lifetime:	2 years planned
Communications Command Link:	148.560 MHz Beacon—136.770; 137.770 MHz S-Band—1698; 1702.5; 1707 MHz APT—137.50; 137.620 MHz DCS—(uplink) 401.650 MHz Search and Rescue—1544.5 MHz Search and Rescue—(uplink) 121.5; 243.0; 406 MHz

The present GOES satellites perform four major functions:

- Make visible and IR measurements (data) of the surface and atmosphere
- Transmit these data to command and data acquisition stations (CDAS)
- Relay processed data and other weather data from the CDAS to other user locations
- Provide two-way communications between the CDAS and other unattended data collection platforms.

The latest GOES satellites use a visible infrared spin scan radiometer atmospheric sounder, which measures a vertical-temperature versus altitude cross-section of the atmosphere. As a result, it is possible to measure altitudes and temperatures of the clouds and draw a three-dimensional picture of their distribution.

The GOES imagery permits the measurement of frame-to-frame movement of selected clouds at different altitudes. Thus, their wind direction, speeds, and circulation patterns may be measured.

GOES also uses the *Data Collection System (DCS)*, as previously described in the NOAA polar orbiting satellite discussion. DCS accepts data from surface stations and transmits processed data to various field stations. However, the GOES DCS cannot locate platforms.

Numerous worldwide surface platforms such as ships' rain gauges, tide gauges, buoys, weather stations, seismometers, etc. report data to the DCS. Platforms transmit data to the GOES or NOAA satellites upon interrogation, whenever a platform sensor exceeds a preset limit, or on schedule.

The currently active GOES satellites are GOES-6 (at 135°W) and GOES-7 (at 75°W) as shown in Fig. 5. Figure 6 illustrates the observation coverage of these satellites. They are designed to observe CONUS and a good portion of the Atlantic and Pacific.

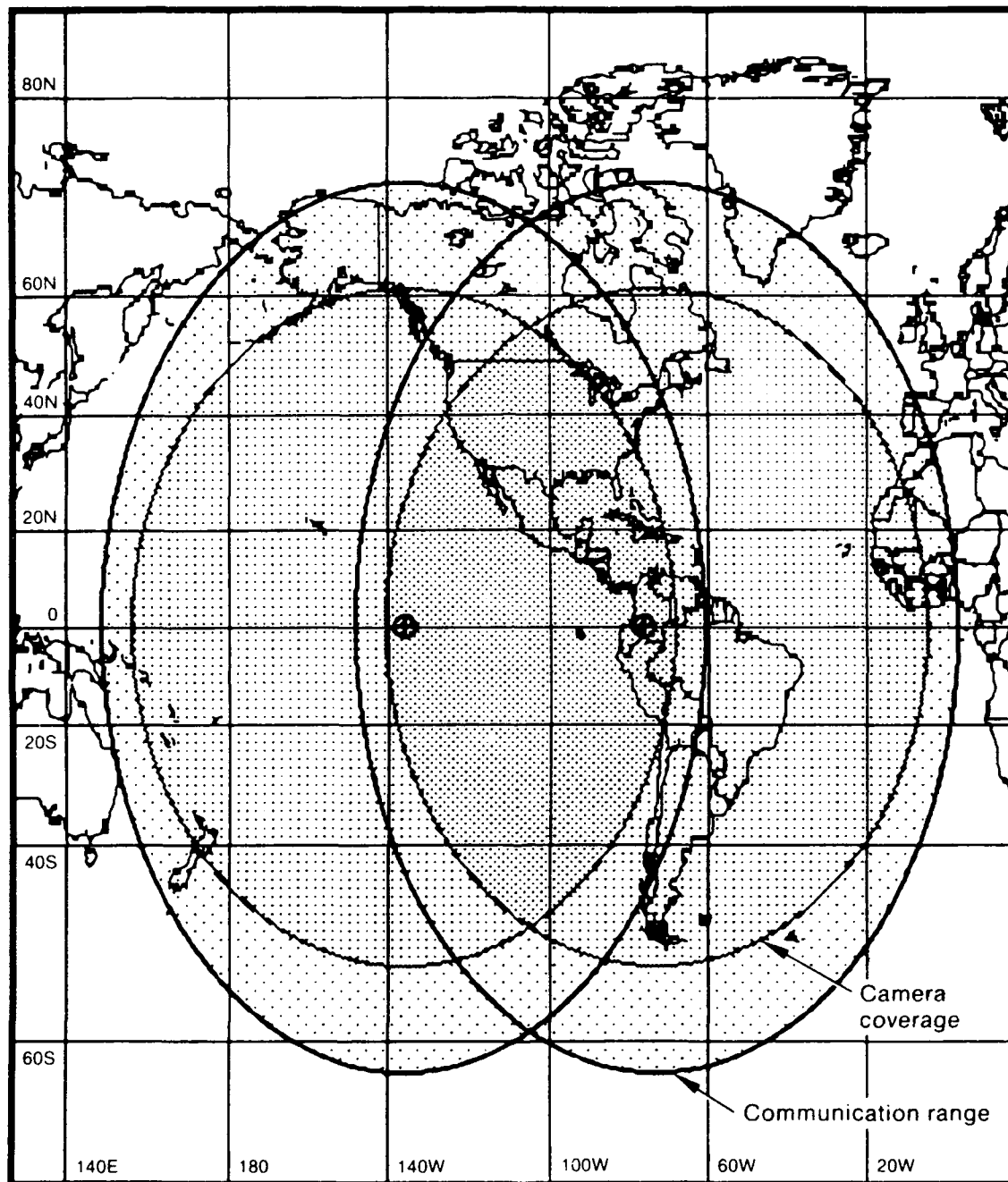


Fig. 6—Observation coverage of GOES satellites (as of January 1989)

#### **IV. COMPATIBILITY BETWEEN NOAA AND DoD METSATS AND GROUND STATIONS**

Both NOAA and DoD meteorological satellites perform similar functions. They obtain weather and earth resources information and supply it to the U.S. military, to U.S. civil and commercial users, and to international weather communities. The NOAA GOES have no DoD equivalent. The NOAA TIROS polar orbiting satellites are akin to the DoD DMSP satellites. Both are manufactured by GE AstroSpace (formerly RCA-ASTRO) and are about 70 percent component identical. This considerable commonality is expected to be reduced in the future.<sup>1</sup>

Obviously, commonality is desirable because the two series can be used to supplement or augment each other's mission. This dual use capability has been recommended by the GAO report. However, we found incompatibility between DMSP and NOAA TIROS-N ground stations because of software differences. Tracking, Telemetry, and Control (TT&C) support from NOAA stations is thus unavailable for DMSP if the latter's ground station should become inoperative. Similarly, DMSP's TT&C capability is unable to provide emergency support to the NOAA TIROS-N satellites.

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<sup>1</sup>U.S. General Accounting Office, 1987.

## V. LEGAL AUTHORITY FOR USE OF NOAA ASSETS BY THE MILITARY

NOAA and DoD have successfully established the basis for military use of NOAA satellites in time of national emergency and war. All the requisite parts are in place. Indeed, this has been successfully accomplished in World Wars I and II. Further, it has been a transfer by mutual consent, pursuant to legal authority granted by Congress and carried out by the President and the Secretaries of Commerce and Defense.

Congress first authorized transfer of NOAA (then C&GS) assets to the War or Navy Departments in the Act of May 22, 1917, which also created the commissioned officer corps.<sup>1</sup> This legislation also provided for administrative action by requiring the cooperation of the Secretaries of War, Navy, and Commerce in prescribing regulations.<sup>2</sup>

Present law remains substantially as it was in 1917. In times of national emergency, the President is authorized to transfer NOAA vessels, equipment, stations, and personnel to a military department.<sup>3</sup> However, Executive Order No. 11023, promulgated May 29, 1962 (see App. B), delegated this authority to the Secretary of Commerce. The Secretary may effect such transfers "only during the existence of a state of national emergency proclaimed by the President." Although the officers transferred become subject to the direct orders of the military department concerned, the Secretary of Commerce retains discretion and control as to when these assets are returned to jurisdiction of the Department of Commerce. If the national emergency has not ceased, this return requires concurrence of the Secretary of Defense.

In the Act of May 22, 1917, Congress further provided for establishment of the administrative structure for transfer by requiring the Secretaries of Defense and Commerce to prescribe regulations governing the duties of NOAA in time of war and peacetime preparation for war.<sup>4</sup> Both Secretaries must approve the regulations.

The current regulations were effective November 1, 1971 (see App. C). Section 3 provides for peacetime cooperation in planning for wartime duties. NOAA is required to undertake training programs to prepare personnel for national emergency service,

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<sup>1</sup>40 Stat. 87, codified as amended as 33 U.S.C. Section 855.

<sup>2</sup>40 Stat. 88, codified as amended as 33 U.S.C. Section 858.

<sup>3</sup>Current version of 33 U.S.C. Sec. 855 (see App. A).

<sup>4</sup>Current version of 33 U.S.C. Sec. 858 (see App. A).

coordinate its programs with DoD, and maintain liaison with the DoD. Section 3 also provides that, in time of national emergency, NOAA shall both continue its normal activities and implement, as requested by the Secretary of Defense, existing MOUs concerning use of NOAA assets. NOAA is also obligated to effect transfers to the military departments as directed by Executive Order.

The Regulations of 1971 also created an Interdepartmental Board for the Cooperation of NOAA and DoD (IBC). The Board has two members, one each appointed by the Secretary of Commerce and the Secretary of Defense. Traditionally the two members are the Chief of the NOAA Corps and a naval officer. The IBC's responsibilities include development of recommendations to be submitted to the Secretaries for discharging the duties of NOAA during times of national emergency.<sup>5</sup>

Some of these recommendations have been formally adopted in memoranda signed by both Secretaries. In 1984 DoD and DoC signed an MOU (App. D) concerning the use of NOAA mapping, charting, and geodetic equipment, facilities, and services during a national emergency. The MOU details the services and facilities of NOAA available to DoD upon its request. It requires that DoC consider "minimum civil needs." Where NOAA and DoD do not agree, the IBC must request the Federal Emergency Management Agency to establish priorities for meeting DoD and civil requirements. In addition to civil needs the Secretary of Commerce must also consider civil defense and limitations on assignment of DoC civilian employees to combat areas. Thus, the Secretary of Commerce retains discretion to establish conditions for use of NOAA resources not transferred to DoD pursuant to 33 U.S.C. Section 855.

Unfortunately, the 1971 regulations and the preceding implementing legislation and Executive Orders do not specifically mention satellite-related assets. Much of the historical NOAA (and predecessor organizations) asset transfers occurred during the Civil War and the two World Wars, well before the space age. Consequently, although ships are specifically referenced, satellites are not. It is NOAA's and DoD's (and our) contention that satellite resources are implicitly included as part of the NOAA assets to be transferred. However, NOAA recognizes (as does DoD possibly) that a definitive

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<sup>5</sup>Note that the Regulations of 1971 as they stand are in conflict with Executive Order 11023. The Regulations rely on executive order to transfer NOAA assets to DoD in times of national emergency. However, Executive Order 11023 delegated the power to act to the Secretary of Commerce, after Presidential proclamation of a national emergency. The IBC has noted the apparent conflict and is taking steps to resolve it.

MOA specifically addressing the transfer of satellite assets should be signed. Such a MOA/MOU might be similar in scope to an existing one describing the transfer of geodetic resources in a national emergency. We concur in this opinion, noting that overall legal authority exists for satellite asset transfer, but implementing regulations do not.

These regulations should address the details of ground station operation. NOAA ground stations are currently staffed almost exclusively by civilian personnel. Their availability outside normal peacetime operations is unknown. Without the ground station staff, the practical use of satellites to provide data for military use becomes moot after a few days of autonomous operation. In a national emergency, NOAA officers will report to their DoD superiors, but it is not clear what the civilian personnel will do. Some may have reserve obligations recalling them to active duty elsewhere.

A survey of critical skills/positions within the NOAA ground station civilian cadre and their associated reserve obligations should lead to an MOA transferring critical NOAA civilian reserve personnel to DoD crisis control. Further, investigations should be made to determine the legal basis for requiring emergency use of the services of these personnel to perform essential ground station tasks.



## VI. CONCLUSIONS AND RECOMMENDATIONS

The use of NOAA assets by DoD in times of national emergency is fairly well-defined both by statute and by interdepartmental agreements. NOAA has also participated in DoD exercises<sup>1</sup> and is clearly the U.S. civil agency most attuned for cooperation with DoD, both on a day-to-day basis and during emergency operations. Nevertheless, several deficiencies exist in the NOAA-DoD relationship as far as the implementation of emergency planning agreements are concerned, and also in possible operational cooperation during actual emergencies. They are:

1. Lack of a signed NOAA-DoD MOA or MOU specifically addressing emergency use of satellite and ground station resources associated with satellite operations.
2. Lack of a personnel plan accounting for the continued use of NOAA civilian satellite ground station personnel during DoD takeover of NOAA resources.
3. Lack of a plan to back up NOAA ground stations in case of terrorist or military attack.
4. Lack of secure communication links between DoD users and the NOAA SOCCs.
5. Widening design divergence between future NOAA polar orbiting satellites and DMSP satellites.
6. Lack of interoperability of NOAA and DMSP TT&C ground stations.

NOAA is studying or correcting some of the deficiencies, but in many cases the DoD is involved and has not yet taken an active part in addressing mutual interagency problems.

*Deficiency 1:* Addressing emergency use of satellite resources. NOAA has prepared a draft MOA, which is currently being circulated for concurrence and approval. We recommend that this delayed agreement be finalized and approved. NOAA appears

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<sup>1</sup>The exercise participation has been minor in terms of involving NOAA satellite resources. NOAA's participation as a civil agency is in marked contrast to others with space resources, namely NASA and EOSAT.

to be the primary motivating force behind this agreement. DoD should take a more active role in ensuring the timely conclusion of negotiations on this MOA or MOU.

*Deficiency 2:* Use of ground station personnel during takeover. NOAA and the IBC are inventorying the ground station civilian personnel resources. In particular, they are attempting to discover how many of these civilian personnel have reserve obligations that would result in their recall to active duty during emergency preparations. It is recommended that this inventory of highly trained personnel be completed. It is further recommended that NOAA and DoD pursue the feasibility of formation of a reserve unit specifically targeted to support DoD activities during mobilization. In other words, the hypothetical 6505th TT&C company (USAFR) would be created and the reservists at the NOAA stations transferred to this reserve unit. Normal reserve training, benefits, and retirement privileges would be provided. Cross-training and annual active duty would regularly occur. This concept is also worthy of investigation in other specialized uses of civilian reserve resources. Its implementation would greatly simplify long-range emergency planning.

*Deficiency 3:* Backing up NOAA ground stations in case of attack. The NOAA TT&C stations contain redundant equipment, but it is kept at the same site. There is no backup to the SOCC. As a result, these essential ground segments are highly vulnerable. Their loss might preclude use of the surviving satellite assets in post-attack recovery operations. It is recommended that DoD conduct a study to investigate these vulnerabilities, determine the cost of providing alternative control facilities, whether in transportable or dispersed fixed locations, and evaluate the desirability of funding such alternatives.

*Deficiency 4:* Secure communication links. Proposed NOAA-DoD MOUs have agreed that DoD should provide secure communication links. This agreement has not yet been implemented, so no secure communication currently exists from DoD to the SOCC. Clear communication during exercises, crises, and national emergency conditions is not acceptable, and today's secure phones, for example, STU-3s, are fairly inexpensive. DoD should initiate actions necessary to provide secure communications links.

*Deficiency 5:* Design divergence. At present, approximately 70 percent of the components of the NOAA TIROS satellites and DoD's DMSP satellites are identical. As divergence in design increases in the future, interoperability will decrease and costs will

increase. GAO has reported on this divergence.<sup>2</sup> It is recommended that DoD evaluate this divergence trend and consider means for increasing satellite and ground station interoperability.

*Deficiency 6: Lack of interoperability.* DMSP TT&C stations can provide a measure of control over NOAA polar orbiting satellites, but the NOAA stations cannot control DMSP. We have been told that the incompatibility is a function of the ground station software. We recommend that the issue of NOAA-DMSP ground station compatibility and backup be evaluated (or reevaluated) and costs related to providing this backup capability be investigated to provide policy guidance in this matter.

NOAA is well-organized and prepared for interaction with DoD. We recommend that their methods of interagency cooperation be used as a basis for similar agreements between the DoD and NASA. However, the existing NOAA-DoD agreements are far superior in concept and advance preparation to any other DoD bilateral or multilateral relationship that we have discussed. Nevertheless, they are not completely acceptable. Details are not sufficiently clarified. Joint exercises are not realistic or comprehensive.

History has shown that mere cosmetic agreements or posturing during peacetime will not translate into real, effective cooperation during chaotic and uncertain conflict or post-attack conditions. Pearl Harbor provides just one example of fumbling, delay, and grandiose actions at cross purposes in spite of elaborate claims of readiness by the U.S. military. What is needed is a realistic and routine exercise of cooperative assets and an organized approach to the integration of resources.

Our research has led us to believe that the NOAA assets—satellites, the NOAA Corps, and civilian personnel at the NOAA satellite ground stations—are a major national resource. Indeed, we believe that these few people, operating within a limited budget and supporting a small number of satellites and ground stations, provide a substantial contribution to the national defense that far outweighs their fiscal support.

The personnel of the NOAA Officer Corps interviewed during our study demonstrated a high level of competence and enthusiasm. The NOAA Suitland ground station operation provides an efficient and cost-effective model for other satellite control facilities that currently cost far more.

Although we have lauded NOAA's satellites, ground stations, and personnel as important resources during peacetime and major potential DoD assets for use during

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<sup>2</sup>GAO, 1987.

emergency conditions, we emphasize the term "potential." Unless clearly defined agreements are coordinated, and testing of the terms of those agreements is performed through training programs and improved exercises, NOAA assets cannot be considered full contributors to U.S. emergency preparedness.

## Appendix A

### 33 U.S.C. SEC 855, 33 U.S.C. SEC 858

#### TITLE 33—NAVIGATION AND NAVIGABLE WATERS

##### **§ 855. Cooperation with and transfer to military departments**

The President is authorized, whenever in his judgment a sufficient national emergency exists, to transfer to the service and jurisdiction of a military department such vessels, equipment, stations, and commissioned officers of the National Oceanic and Atmospheric Administration as he may deem to the best interest of the country, and after such transfer all expenses connected therewith shall be defrayed out of the appropriations for the department to which transfer is made: *Provided*, That such vessels, equipment, stations, and commissioned officers shall be returned to the National Oceanic and Atmospheric Administration when such national emergency ceases, in the opinion of the President, and nothing in this Act shall be construed as transferring the National Oceanic and Atmospheric Administration or any of its functions from the Department of Commerce except in time of national emergency and to the extent herein provided: *Provided further*, That any of the commissioned officers of the National Oceanic and Atmospheric Administration who may be transferred as provided in this section, shall while under the jurisdiction of a military department, have proper military status and shall be subject to the laws, regulations, and orders for the government of the Army, Navy, or Air Force, as the case may be, insofar as the same may be applicable to persons whose retention permanently in the military service of the United States is not contemplated by law.

(May 22, 1917, ch. 20, § 16, 40 Stat. 87; Oct. 14, 1966, Pub. L. 89-657, § 1(1), 80 Stat. 907; 1965 Reorg. Plan No. 2, eff. July 13, 1965, 30 F.R. 8819, 79 Stat. 1318; Oct. 14, 1966, Pub. L. 89-657, § 1(1), 80 Stat. 907; 1970 Reorg. Plan No. 4, eff. Oct. 3, 1970, 35 F.R. 15627, 84 Stat. 2090.)

##### **§ 858. Rules and regulations when cooperating with military departments**

The Secretary of Defense and the Secretary of Commerce shall jointly prescribe regulations governing the duties to be performed by the National Oceanic and Atmospheric Administration in time of war, and for the cooperation of that service with the military departments in time of peace in preparation for its duties in war, which regulations shall not be effective unless approved by each of those Secretaries, and included therein may be rules and regulations for making reports and communications between a military department and the National Oceanic and Atmospheric Administration.

(May 22, 1917, c. 20, § 16, 40 Stat. 88; 1965 Reorg. Plan No. 2, eff. July 13, 1965, 30 F.R. 8819, 79 Stat. 1318; Oct. 14, 1966, Pub. L. 89-657, § 1(2), 80 Stat. 907; 1970 Reorg. Plan No. 4, eff. Oct. 3, 1970, 35 F.R. 15627, 84 Stat. 2090.)

## Appendix B

### EXECUTIVE ORDER NO. 11023

#### PROVIDING FOR THE PERFORMANCE BY THE SECRETARY OF COMMERCE OF CERTAIN FUNCTIONS RELATING TO THE COAST AND GEODETIC SURVEY

By virtue of the authority vested in me by section 301 of title 3 of the United States Code, and as President of the United States, it is ordered as follows:

Section 1. The Secretary of Commerce is hereby designated and empowered to perform the following-described functions without the approval, ratification, or other action of the President:

(a) The authority contained in section 6(b) of the Coast and Geodetic Survey Commissioned Officers Act of 1948 (62 Stat. 298; 33 U.S.C. 853e(b)) to revoke the commissions of ensigns of the Coast and Geodetic Survey who are found not fully qualified and to separate such ensigns from the commissioned service.

(b) The authority vested in the President by section 12(a) of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853j-1(a)), to make temporary appointments in the grade of ensign in the Coast and Geodetic Survey.

(c) The authority vested in the President by section 12(b) of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853j-1(b)), to temporarily promote officers in the permanent grade of ensign in the Coast and Geodetic Survey, and to appoint such officers to the grade of lieutenant junior grade whenever vacancies exist in higher grades.

(d) The authority vested in the President by section 12(c) of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853j-1(c)), to temporarily promote any officer one grade.

(e) The authority vested in the President by section 13(b) of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853k(b)), to defer the retirement of an officer of the Coast and Geodetic Survey serving in a rank above that of captain who has attained the age of sixty-two years.

(f) The authority vested in the President by section 14 of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853l), to retire from the active service any commissioned officer of the Coast and Geodetic Survey, upon his own application, who has completed twenty years of active service in the Coast and Geodetic Survey.

(g) The authority vested in the President by section 23(a) of the Coast and Geodetic Survey Commissioned Officers Act of 1948, as amended (75 Stat. 506; 33 U.S.C. 853t(a)), (1) to find that any officer appointed under section 23 is not qualified for service, (2) to revoke the commissions of officers in respect of whom such findings are made, and (3) to prescribe the regulations referred to in that section.

(h) The authority contained in section 1(1) of the Act of December 3, 1942 (56 Stat. 1038; 33 U.S.C. 854a-1(1)) to temporarily promote to higher ranks or grades, upon recommendation of the Secretary of the military department concerned, commissioned officers of the Coast and Geodetic Survey transferred to the military departments.

(i) The authority contained in section 1(2) of the Act of December 3, 1942 (56 Stat. 1038; 33 U.S.C. 854a-1(2)) to temporarily promote commissioned officers of the Coast

and Geodetic Survey to fill vacancies in ranks and grades caused by transfer of commissioned officers to the service and jurisdiction of the military departments.

(j) The authority contained in section 1(3) of the Act of December 3, 1942 (56 Stat. 1038; 33 U.S.C. 854a-1(3)) to temporarily appoint deck officers and junior engineers to the grade of ensign to fill vacancies caused by transfer of officers to the military departments.

(k) The authority vested in the President by section 16 of the Act of May 22, 1917 (40 Stat. 87; 33 U.S.C. 855), to transfer to service and jurisdiction of the Department of Defense, as he may deem to be to the best interest of the country, vessels, equipment, stations and personnel of the Coast and Geodetic Survey; but the Secretary of Commerce may effect such transfers only during the existence of a state of national emergency proclaimed by the President. Commissioned officers so transferred shall serve under their commissions in the Coast and Geodetic Survey and while so serving shall constitute a part of the active armed forces of the United States and shall be under the direct orders of, and shall be subject to the applicable laws, regulations, and orders for the government of, the armed forces to which they are transferred, respectively. The Secretary of Commerce may return such vessels, equipment, stations, and personnel to the jurisdiction of the Department of Commerce, but in time of national emergency such return shall be effected only with the concurrence of the Secretary of Defense.

(l) The authority vested in the President by section 8 of the Act of August 6, 1947 (61 Stat. 788; 33 U.S.C. 883h) to employ public vessels, and to give instructions for regulating their conduct, to carry out the provisions of the Act of August 6, 1947; but the employment by the Secretary of Commerce of vessels, except those of the Department of Commerce or of any subordinate entity thereof, shall require the concurrence of the head of the department or other executive agency having custody or control of the vessel.

Sec. 2. Upon receipt by the Secretary of Commerce from the President or from the President's representative of information showing that the Senate has confirmed nominees of the President for appointment as commissioned officers of the Coast and Geodetic Survey, and without any further action on the part of the President, (1) the Secretary of Commerce or an officer of the Department of Commerce designated by the Secretary may, upon completion of statutory requirements for such appointments, tender offers of appointment to the nominees and upon acceptance such persons shall be deemed to be appointed accordingly, (2) the Secretary of Commerce, in the name of the President, shall issue to each such person a commission evidencing the appointment of such person accordingly, and (3) the commissions of such persons shall be deemed to have been signed by the President. The effective date specified in any commission so issued shall be deemed, for all purposes, to be the date of the appointment evidenced by such commission.

Sec. 3. In connection with making appointments or promotions under authority delegated to him by subsections (b), (c), (d), (h), (i), and (j) of section 1 of this order, the Secretary of Commerce shall issue to each person appointed or promoted by him thereunder a certificate evidencing the appointment or promotion of such person. Such certificate may be issued in the name of the President.

Sec. 4. Any requirement of any provision of law that commissions of officers under the direction and control of the Secretary of Commerce be signed by the President before the seal of the Department of Commerce may be affixed thereto shall, in the case of officers appointed under the procedure set forth in section 2 of this order and in the case of officers appointed or promoted under authority delegated by subsections (b), (c), (d), (h), (i), and (j) of section 1 of this order, be deemed to be satisfied by signature of the commission or certificate by the Secretary of Commerce, before the departmental seal is affixed thereto.

Sec. 5. The Secretary of Commerce is hereby authorized to accept, in the name of the President, the resignation of a commissioned officer, either permanent or temporary, of the Coast and Geodetic Survey.

Sec. 6. The authority delegated by the provisions of subsections (b), (c), (d), (h), (i), and (j) of section 1 of this order shall be deemed to include the authority to terminate any appointment or promotion made under the provisions of law referred to in those subsections.

Sec. 7. All actions heretofore taken by the President with respect to the matters affected by this order and in force at the time of issuance of this order, including any regulations prescribed or approved by the President with respect to such matters shall, except as they may be inconsistent with the provisions of this order, remain in effect until amended, modified or revoked pursuant to the authority conferred by this order. The following are hereby superseded: (1) Letter of the President to the Secretary of Commerce, dated April 23, 1929, and relating to the general subject of section 2 of this order, and (2) letter of the Secretary to the President, dated July 1, 1919, and directed to the Secretary of Commerce, relating to the general subject of section 5 of this order.

Sec. 8. As used in this order the term "functions" embraces duties, powers, responsibilities, authority or discretion, and the term "perform" may be construed to mean "exercise."

John F. Kennedy

The White House,  
May 28, 1962.



## **Appendix C**

### **DoD/DoC REGULATIONS GOVERNING COOPERATION OF NOAA WITH THE DoD**

#### **DEPARTMENT OF DEFENSE, DEPARTMENT OF COMMERCE REGULATIONS GOVERNING COOPERATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION WITH THE DEPARTMENT OF DEFENSE**

1. Authority. Section 16 of the Act of May 22, 1917, Chapter 20 (40 Stat.88) as amended by PL 89-657, October 14, 1966 (80 Stat. 907) authorizes the President, whenever in his judgment a sufficient national emergency exists, to transfer commissioned officers, vessels (hereafter referred to as ships), stations, and equipment of the National Oceanic and Atmospheric Administration (NOAA) to the military departments. The section, as amended, also provides that the Secretary of Defense and the Secretary of Commerce shall jointly prescribe regulations governing wartime duties of the National Oceanic and Atmospheric Administration and peacetime cooperation of National Oceanic and Atmospheric Administration with the military departments in preparation for its wartime duties. The following regulations are prescribed jointly by the Secretary of Defense and the Secretary of Commerce, effective 1 November 1971. All regulations previously issued under this authority are hereby revoked.
2. Definition. The term Department of Defense, as used in these regulations includes the Secretary of Defense and his office, the Defense agencies, the Joint Chiefs of Staff, the Joint Staff and joint agencies, and the Departments of the Army, Navy, and Air Force.
3. National Oceanic and Atmospheric Administration Mission Responsibilities.
  - a. In time of peace, the National Oceanic and Atmospheric Administration shall, in addition to its normal activities, to the extent deemed feasible by the Secretary of Commerce:
    - (1) coordinate its programs with the programs of the Department of Defense in connection with planning for wartime duties of the National Oceanic and Atmospheric Administration, and provide

assistance in matters relating to national defense consistent with its resources and facilities;

- (2) undertake such training programs as may be considered desirable by the Department of Defense to prepare its personnel for effective service in time of national emergency; and
  - (3) maintain liaison with the Department of Defense, as necessary, to assure prompt and orderly utilization of its facilities and personnel in support of national defense in time of national emergency.
- b. In time of national emergency declared by the Congress or the President, the National Oceanic and Atmospheric Administration shall:
- (1) continue its normal activities, subject to the provisions of clauses (2) and (3) below:
  - (2) implement, as requested by the Secretary of Defense, existing memoranda of understanding regarding utilization of its facilities and personnel for purposes of national defense; and
  - (3) promptly effect such transfers of ships, aircraft, equipment, stations, and commissioned officers to the service and jurisdiction of the military departments as the President, by Executive Order, may direct.

4. Personnel

- a. Whenever the President determines that a sufficient national emergency exists, commissioned officers of the National Oceanic and Atmospheric Administration shall be transferred by Executive Order to the service and jurisdiction of the military departments.
- b. Whenever the Secretaries concerned consider it to be in the national interest, the Secretary of Commerce shall assign commissioned officers to serve with military departments in such capacities as the Secretaries determine will contribute to the wartime readiness of the National Oceanic and Atmospheric Administration.
- c. Officers assigned to and serving with military departments pursuant to law, whether under subsection a. or b. above, shall be subject to the Uniform Code of Military Justice under the cognizance of the Secretary of the department concerned in accordance with Article 2 of the UCMJ.

5. **Property.** The President, when he determines that a sufficient national emergency exists, may transfer ships, aircraft, equipment, and stations of the National Oceanic and Atmospheric Administration to the service and jurisdiction of the military departments. Transfer and return of such property shall be pursuant to Executive Order.
  - a. Any ship, aircraft, station, or equipment transferred to a military department shall be returned to the National Oceanic and Atmospheric Administration in as good condition as when transferred, ordinary wear and tear excepted, or replaced in kind, to the satisfaction of the National Oceanic and Atmospheric Administration. All expenses necessary to alter a ship, an aircraft, a station, or equipment to fit it for the service required by the receiving military department and to replace it or return it to its condition at the time of transfer shall be borne by the military department to which transferred.
  - b. A complete inventory of all property conveyed as the result of any transfer shall be prepared by the National Oceanic and Atmospheric Administration, and an authorized agent of the receiving military department shall provide a receipt therefore.
6. **Interdepartmental Board.** There shall exist an Interdepartmental Board for the Cooperation of the National Oceanic and Atmospheric Administration with the Department of Defense in connection with planning for wartime duties of the National Oceanic and Atmospheric Administration.
  - a. **Organization:** The Board shall consist of two members, one appointed by the Secretary of Commerce, and the other appointed by the Secretary of Defense. The Board shall be responsible for coordinating wartime planning dealing with mapping, charting, and geodetic sciences, and with operational services in meteorology, climatology, oceanography, aeronomy, weather satellites, and related elements of the terrestrial environment. Each member, as appropriate, may be assisted by experts. The member appointed by the Secretary of Commerce shall be Chairman of the Board and preside at all of its meetings. A recorder, appointed by the Chairman, shall keep minutes of all Board meetings and assist in the preparation of documents and correspondence of the Board. The Board

shall be empowered to establish ad hoc groups to assist in performing its duties. The Board shall meet annually, and at such other times as may be required, at the call of the Chairman.

b. Duties.

(1) In time of peace, the Board shall consider how the National Oceanic and Atmospheric Administration and the Department of Defense can cooperate to prepare the National Oceanic and Atmospheric Administration for timely and efficient discharge of its duties in time of national emergency. The Board shall submit for the approval of the Secretaries:

- (a) recommendations as to how to better utilize the products, facilities, and services of the National Oceanic and Atmospheric Administration for national defense purposes;
- (b) recommendations as to training or participating in programs of mutual interest;
- (c) recommendations and relative priorities for continuing, in time of national emergency, selected peacetime reimbursable programs performed by the National Oceanic and Atmospheric Administration in support of the Department of Defense; and
- (d) recommendations as to new, or changes to standing memoranda of understanding between the Department of Commerce and the Department of Defense with respect to actions by the National Oceanic and Atmospheric Administration in the interest of national defense.

c. Communications: Direct communications between appropriate representatives of the Department of Defense, including the military departments, and the Department of Commerce, including the National Oceanic and Atmospheric Administration, are authorized on matters concerning the implementation of memoranda of understanding or other agreements which carry out the provisions of the Act of 22 May 1917, as amended, and of these regulations.

7. Miscellaneous.

a. Date of Transfer: The date on which the appropriate military department

assumes authority over and responsibility for personnel, ships, aircraft, equipment, or stations, and the date on which the National Oceanic and Atmospheric Administration relinquishes authority and responsibility shall be the date the actual transfer is effected unless the Executive Order directing the transfer otherwise provides.

- b. Appropriations: After the date of transfer of any ship, aircraft, station, equipment, or personnel of the National Oceanic and Atmospheric Administration to a military department, all expenses connected therewith shall be defrayed out of the appropriations for the Department to which transfer is made. The cost of pay and allowance support for National Oceanic and Atmospheric Administration commissioned officers assigned to the Department of Defense in accordance with paragraph 4b above shall be borne by the Department of Commerce.
- c. Reports: Personnel records and correspondence necessary to preserve the continuity of administrative records of the National Oceanic and Atmospheric Administration shall be furnished to the National Oceanic and Atmospheric Administration by the military departments.

## **Appendix D**

### **MOU BETWEEN THE DoD AND DoC CONCERNING THE USE OF NOAA MAPPING, CHARTING, AND GEODETIC EQUIPMENT, FACILITIES, AND SERVICES DURING A NATIONAL EMERGENCY**

#### **1. PURPOSE**

It is the purpose of this Memorandum of Understanding to provide, under conditions of a national emergency, for the effective use, cooperation and coordination of the mapping, charting, and geodetic services of the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce (DoC) in support of Department of Defense (DoD) requirements; and to establish the conditions for use of NOAA resources not transferred to DoD pursuant to title 33, United States Code, section 855 to provide such services in the accomplishment of the responsibilities of DoD. This Memorandum of Understanding will be implemented upon Presidential or congressional declaration of a state of national emergency and when requested by the Secretary of Defense, and will be in conformity with the provisions of section 601 of the Economy Act of 1932 (31 U.S.C. 686).

#### **2. UNDERSTANDING**

Pursuant to paragraphs 3(b) and 6(b) of the Department of Defense-Commerce Regulations Governing Cooperation of the National Oceanic and Atmospheric Administration with the Department of Defense effective 1 November 1971, DoC agrees to make the following services and facilities of NOAA available for projects, within the limitations of 33 U.S.C. 883a, required by DoD upon its request, due consideration being given to civil defense, minimum civil needs, and limitations on assignment of DoC civilian employees to combat areas:

- a. Establishment of geodetic control, performance of geodetic computations, and allied processes pertaining to surveying and geodesy.
- b. Compilation of magnetic data required for isomagnetic charts.

- c. Surveying in support of DoD requirements for marine mapping and charting.
- d. Preparation and publication of tidal data to meet special military requirements.
- e. Cartographic facilities and services required for research, compilation, and color separation for topographic maps, nautical charts, aeronautical charts, target materials, and allied publications as required during the period of national emergency.
- f. Photogrammetric and ground surveying and allied services required for location of objects of military significance and for preparation of topographic maps.
- g. Cartographic and reproduction (including photographic processing and indexing) facilities and services to meet special requirements of DoD commensurate with NOAA capabilities. In the event that NOAA and DoD cannot agree upon the level of response to DoD requirements relative to civil needs, the Interdepartmental Board for Cooperation of the National Oceanic and Atmospheric Administration with the Department of Defense will request that the Federal Emergency Management Agency (FEMA) establish relative priorities for meeting DoD and civil requirements.

### **3. GENERAL PROVISIONS**

- a. NOAA personnel engaged in the accomplishment of work for DoD will have an appropriate security clearance issued by the Security Control Officer of DoC prior to having access to classified information.
- b. Facilities allocated for accomplishment of DoD work should preferably be located away from coastal or prime target areas.
- c. The utilization of services set forth in this Memorandum of Understanding will be within the administrative structure of NOAA.
- d. Expansion of facilities of NOAA to meet military requirements will be determined by policies of DoD, assisted by such advisory boards of representatives of military and civilian mapping and charting organizations as may be established.
- e. DoD will budget for all military projects envisioned herein, and will reimburse DoC to cover the cost of assigned projects.

- f. DoD will furnish DoC its estimated requirements as far in advance as possible and in sufficient detail to support NOAA planning efforts.
- g. DoD will assist, as may be required, in the procurement or development of additional equipment, materials, or other facilities needed for the successful completion by NOAA of assigned military projects.

#### **4. SPECIAL PROVISIONS**

Request for mapping, charting, and geodetic services of NOAA described in paragraph 2 above, or other mapping, charting, and geodetic services which NOAA may be able to provide will be processed by or through the Defense Mapping Agency, DoD.

5. The details of organizational and liaison relationship between DoD elements and DoC elements to best utilize the overall capabilities of NOAA will be developed and updated as required in order that full utilization may be made upon implementation of the Memorandum of Understanding.

6. The terms of this Memorandum of Understanding are subject to change as dictated by mobilization requirements upon agreement of the departments concerned.

7. This Memorandum of Understanding supersedes and rescinds the Memorandum between DoC and DoD dated 7 November 1976.

_____	SIGNATURES	_____
SECRETARY OF DEFENSE		SECRETARY OF COMMERCE
_____		_____
Date		Date



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